



## REMARKS

### Claim Amendments

Applicants have amended claims 48, 49, 61 and 81 to include reference to the subject matter of canceled claim 43 and to improve their form. Applicants have amended claims 51, 53-54, 60, 65, 68-69, 73-74 to delete reference to canceled claims and to improve their form. Applicants have amended claims 62-63 and 75 to improve their form.

Applicants have added claims 88-95. Support for added claims 88-91 may be found, for example, in originally filed claim 6; on page 11, lines 22-34; page 13, lines 27-29; and page 18, lines 15-19. Support for added claims 92-95 may be found, for example, in originally filed claim 36; and on page 28, lines 20-23. These amendments do not add new matter. Their entry is requested.

### The Restriction Requirement

The Examiner has required restriction among the following eight groups of inventions under 35 U.S.C. § 121:

- Group I: Claims 41-42, drawn to a starch with increased phosphate content isolated from plants with increased phosphorylase levels;
- Group II: Claims 43 and 45-46, drawn to isolated phosphorylase protein and antibodies thereto;
- Group III: Claims 44 and 78-79, drawn to cells and plants transformed with a phosphorylase gene in sense orientation and a method for producing phosphorylase protein;
- Group IV: Claims 47 and 80, drawn to oligonucleotide probes;

- Group V: Claims 48-49, 51-58, 60-63, 65-69, 73-76 and 81, drawn to DNA encoding antisense RNA or ribozymes to a phosphorylase gene, plant cells and plants transformed therewith, and methods for its use to obtain starch with reduced phosphate content;
- Group VI: Claims 50 and 64, drawn to DNA encoding a portion of a phosphorylase gene in sense orientation sufficient for sense cosuppression in transformed cells;
- Group VII: Claims 59, 70-72 and 82-87, drawn to starch with reduced phosphate content isolated from plants with reduced levels of phosphorylase protein; and
- Group VIII: Claim 77, drawn to the use of a tuber for making fried foodstuff.

The Examiner contends that Groups II and III, Groups I and III and Groups V and VII are distinct because they are related as a process of making and a product made, which product can be made by a materially different process. The Examiner states that Groups V and VIII are related as product and process of use and are distinct because the product of Group V can be used in a process that is materially different than the process of Group VIII.

The Examiner contends that Groups I-VIII are unrelated because the inventions of these different Groups have different modes of operation and different functions that are not required by other Groups. The Examiner states that the isolated starch of Groups I and VII is not required by any other Group and that the starches in these Groups are distinct from each other in terms of phosphate content. The Examiner states that the products of Groups II, III, IV, V, VI, VII and VIII are not required by any other Group and that the methods of Groups III, V and VI are not required by any other group.

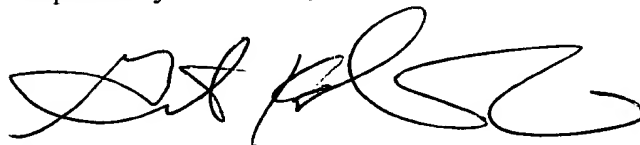
The Examiner further states that claims 53, 58, 59, 65, 68, 70, 72-74, 81 and 87 are objected to under 37 C.F.R. § 1.75(c) for improper multiple dependencies.

As a preliminary matter, applicants note that the enzyme of the invention is "R1 protein" which is distinct from "starch phosphorylase" protein as stated by the Examiner.

Applicants have canceled, without prejudice, claims 59, 70, 72 and 87 and have amended claims 53, 58, 65, 68, 73-74, and 81 to improve their form and to remove multiple dependencies, thus obviating the objection under 37 C.F.R. § 1.75(c).

Applicants elect Group V, claims 48-49, 51-58, 60-63, 65-69, 73-76 and 81, without traverse. Added claims 88-95 depend from claims in Group V and properly should be included in this group. This election is made expressly without waiver of applicants' right to continue to prosecute and to obtain claims to the non-elected and/or canceled subject matter either in this application or in other applications claiming priority herefrom.

Respectfully submitted,



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48. (Amended) A DNA molecule encoding an antisense RNA complementary to [the] a transcript[s] of a [DNA molecule encoding a protein of claim 43] nucleic acid molecule encoding a protein which is present in plant cells in starch granule-bound form as well as in soluble form, said nucleic acid molecule selected from the group consisting of:

- (a) a nucleic acid molecule encoding a protein with the amino-acid sequence indicated in SEQ ID NO: 2;
- (b) a nucleic acid molecule comprising the coding region of the nucleotide sequence indicated in SEQ ID NO: 1;
- (c) a nucleic acid molecule hybridizing to a nucleic acid molecule of (a) or (b);
- (d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to a nucleic acid molecule of (a) or (b); and
- (e) a fragment, derivative or allelic variant of a nucleic acid molecule of (a), (b), (c), or (d).

49. (Amended) A DNA molecule encoding an RNA with ribozyme activity which specifically cleaves a transcript[s] of a [DNA molecule encoding a protein of claim 43] nucleic acid molecule encoding a protein which is present in plant cells in starch granule-bound form as well as in soluble form, said second nucleic acid molecule selected from the group consisting of:

- (a) a nucleic acid molecule encoding a protein with the amino-acid sequence indicated in SEQ ID NO: 2;
- (b) a nucleic acid molecule comprising the coding region of the nucleotide sequence indicated in SEQ ID NO: 1;
- (c) a nucleic acid molecule hybridizing to a nucleic acid molecule of (a) or (b);
- (d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to a nucleic acid molecule of (a) or (b); and
- (e) a fragment, derivative or allelic variant of a nucleic acid molecule of (a), (b), (c), or (d).

51. (Amended) A vector [containing a DNA molecule of any one of claims 48 to 50] comprising the DNA molecule according to claim 48 or 49.

52. (Amended) The vector of claim 51, wherein the DNA molecule is [combined with] operably linked to regulatory [DNA] elements ensuring transcription in a plant cell[s].

53. (Amended) A host cell [containing a DNA molecule of any one of claims 48 to 50 or a vector of claim 51 or 52] comprising the DNA molecule according to claim 48 or 49 or comprising a vector comprising said DNA molecule.

54. (Amended) A transgenic plant cell [containing a DNA molecule of any one of claims 48 to 50 in combination with] comprising the DNA molecule

according to claim 48 or 49, wherein said DNA molecule is operably linked to regulatory [DNA] elements ensuring transcription in a plant cell[s].

55. The transgenic plant cell of claim 54, in which the activity of at least one further enzyme involved in starch biosynthesis or modification is reduced when compared to non-transformed plants.

56. The transgenic plant cell of claim 55 in which the activity of a branching enzyme is reduced.

57. The transgenic plant cell of claim 55 in which the activity of a starch granule-bound starch synthase of the isotype I (GBSS I) is reduced.

60. (Amended) An RNA molecule obtainable by transcription of [a DNA molecule of any one of claims 48 to 50] the DNA molecule according to claim 48 or 49.

61. (Amended) A method for [the production of] producing a transgenic plant cell[s] synthesizing a modified starch comprising the step of reducing in the cell [wherein] the amount of a protein[s of claim 43, which are synthesized in the cells in endogenous form, is reduced in the cells] which is present in the plant cell in starch granule-bound form as well as in soluble form, said protein encoded by a nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule encoding a protein with the amino-acid sequence indicated in SEQ ID NO: 2;

- (b) a nucleic acid molecule comprising the coding region of the nucleotide sequence indicated in SEQ ID NO: 1;
- (c) a nucleic acid molecule hybridizing to a nucleic acid molecule of (a) or (b);
- (d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to a nucleic acid molecule of (a) or (b); and
- (e) a fragment, derivative or allelic variant of a nucleic acid molecule of (a), (b), (c), or (d)

wherein said reducing results in the plant cell producing a modified starch.

62. (Amended) The method of claim 61 wherein the reduction of the amount of the protein[s of claim 43] in the cell[s] is caused by an antisense effect.

63. (Amended) The method of claim 61 wherein the reduction of the amount of the protein[s of claim 43] in the cell[s] is caused by a ribozyme effect.

65. (Amended) The method of any one of claims 61 to [64] 63, wherein the enzyme activity of at least one further enzyme involved in the starch biosynthesis and/or modification is reduced.

66. The method of claim 65 wherein the enzyme is a branching enzyme.

67. The method of claim 65 wherein the enzyme is a starch granule-bound starch synthase of the isotype I (GBSSI).

68. (Amended) A plant cell obtainable by [a] the method of any one of claims 61 to [67] 63.

69. (Amended) A transgenic plant [obtainable by regenerating] comprising the plant cell of claim 68.

73. (Amended) [The] A propagation material of the plant[s of claim 58 or 69, containing plant cells of any one of claims 54 to 57 or of claim 68] according to claim 69.

74. (Amended) The transgenic plant of claim [58 or] 69 which is a potato plant.

75. (Amended) [Tuber] A tuber of [a] the potato plant of claim 74.

76. The tuber of claim 75 which in comparison to tubers of wild-type plants exhibits a reduced cold sweetening.

81. (Amended) The transgenic plant cell of claim 54 wherein the amount of a protein [of claim 43] is reduced in the transgenic plant cell when compared to the wild-type plant cell, wherein the protein is present in the plant cell in



starch granule-bound form as well as in soluble form, and wherein the protein is encoded by a nucleic acid molecule selected from the group consisting of:

- (a) a nucleic acid molecule encoding a protein with the amino-acid sequence indicated in SEQ ID NO: 2;
- (b) a nucleic acid molecule comprising the coding region of the nucleotide sequence indicated in SEQ ID NO: 1;
- (c) a nucleic acid molecule hybridizing to a nucleic acid molecule of (a) or (b);
- (d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to a nucleic acid molecule of (a) or (b); and
- (e) a fragment, derivative or allelic variant of a nucleic acid molecule of (a), (b), (c), or (d).